

2N5336 2N5338  
2N5337 2N5339

**SILICON  
NPN TRANSISTORS**



**TO-39 CASE**



[www.centrasemi.com](http://www.centrasemi.com)

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 2N5336 series devices are silicon epitaxial planar NPN transistors designed for power amplifier and switching power supplies where very low saturation voltage and high speed switching at high current levels are needed.

**MARKING: FULL PART NUMBER**

**MAXIMUM RATINGS:** ( $T_C=25^\circ\text{C}$ )

Collector-Base Voltage  
Collector-Emitter Voltage  
Emitter-Base Voltage  
Continuous Collector Current  
Continuous Base Current  
Power Dissipation  
Operating and Storage Junction Temperature  
Thermal Resistance

SYMBOL	2N5336	2N5338	UNITS
	2N5337	2N5339	
$V_{CB0}$	80	100	V
$V_{CEO}$	80	100	V
$V_{EBO}$		6.0	V
$I_C$		5.0	A
$I_B$		1.0	A
$P_D$		6.0	W
$T_J, T_{stg}$	-65 to +200		$^\circ\text{C}$
$\theta_{JC}$	29		$^\circ\text{C/W}$

**ELECTRICAL CHARACTERISTICS:** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	2N5336		2N5338		UNITS
		2N5337	2N5339	2N5337	2N5339	
		MIN	MAX	MIN	MAX	
$I_{CBO}$	$V_{CB}=\text{Rated } V_{CB0}$	-	10	-	10	$\mu\text{A}$
$I_{CEV}$	$V_{CE}=75\text{V}, V_{EB}=1.5\text{V}$	-	10	-	-	$\mu\text{A}$
$I_{CEV}$	$V_{CE}=90\text{V}, V_{EB}=1.5\text{V}$	-	-	-	10	$\mu\text{A}$
$I_{CEV}$	$V_{CE}=75\text{V}, V_{EB}=1.5\text{V}, T_C=150^\circ\text{C}$	-	1.0	-	-	mA
$I_{CEV}$	$V_{CE}=90\text{V}, V_{EB}=1.5\text{V}, T_C=150^\circ\text{C}$	-	-	-	1.0	mA
$I_{CEO}$	$V_{CE}=75\text{V}$	-	100	-	-	$\mu\text{A}$
$I_{CEO}$	$V_{CE}=90\text{V}$	-	-	-	100	$\mu\text{A}$
$I_{EBO}$	$V_{EB}=6.0\text{V}$	-	100	-	100	$\mu\text{A}$
$BV_{CEO}$	$I_C=50\text{mA}$	80	-	100	-	V
$V_{CE(\text{SAT})}$	$I_C=2.0\text{A}, I_B=200\text{mA}$	-	0.7	-	0.7	V
$V_{CE(\text{SAT})}$	$I_C=5.0\text{A}, I_B=500\text{mA}$	-	1.2	-	1.2	V
$V_{BE(\text{SAT})}$	$I_C=2.0\text{A}, I_B=200\text{mA}$	-	1.2	-	1.2	V
$V_{BE(\text{SAT})}$	$I_C=5.0\text{A}, I_B=500\text{mA}$	-	1.8	-	1.8	V
$h_{FE}$	$V_{CE}=2.0\text{V}, I_C=500\text{mA}$ (2N5336, 2N5338)	30	-	30	-	
$h_{FE}$	$V_{CE}=2.0\text{V}, I_C=500\text{mA}$ (2N5337, 2N5339)	60	-	60	-	
$h_{FE}$	$V_{CE}=2.0\text{V}, I_C=2.0\text{A}$ (2N5336, 2N5338)	30	120	30	120	
$h_{FE}$	$V_{CE}=2.0\text{V}, I_C=2.0\text{A}$ (2N5337, 2N5339)	60	240	60	240	
$h_{FE}$	$V_{CE}=2.0\text{V}, I_C=5.0\text{A}$ (2N5336, 2N5338)	20	-	20	-	
$h_{FE}$	$V_{CE}=2.0\text{V}, I_C=5.0\text{A}$ (2N5337, 2N5339)	40	-	40	-	

R1 (4-April 2014)

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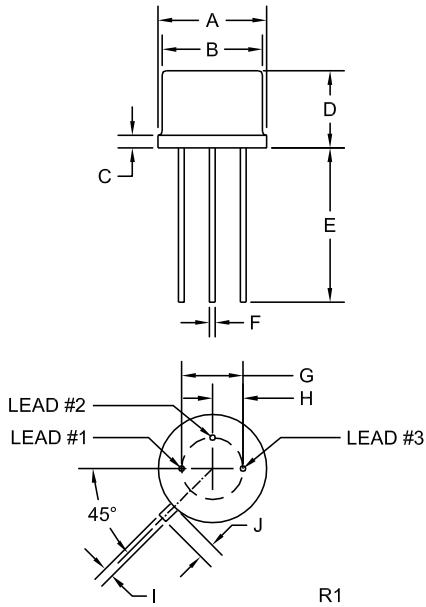
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**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	2N5336		2N5338		UNITS
		MIN	MAX	MIN	MAX	
$f_T$	$V_{CE}=10\text{V}$ , $I_C=500\text{mA}$ , $f=10\text{MHz}$	30	-	30	-	MHz
$C_{ob}$	$V_{CB}=10\text{V}$ , $I_E=0$ , $f=100\text{kHz}$	-	250	-	250	pF
$C_{ib}$	$V_{BE}=2.0\text{V}$ , $I_C=0$ , $f=100\text{kHz}$	-	1.0	-	1.0	nF
$t_{on}$	$V_{CC}=40\text{V}$ , $I_C=2.0\text{A}$ , $I_{B1}=200\text{mA}$	-	200	-	200	ns
$t_s$	$V_{CC}=40\text{V}$ , $I_C=2.0\text{A}$ , $I_{B1}=I_{B2}=200\text{mA}$	-	2.0	-	2.0	$\mu\text{s}$
$t_f$	$V_{CC}=40\text{V}$ , $I_C=2.0\text{A}$ , $I_{B1}=I_{B2}=200\text{mA}$	-	200	-	200	ns

**TO-39 CASE - MECHANICAL OUTLINE**



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A (DIA)	0.335	0.370	8.51	9.40
B (DIA)	0.315	0.335	8.00	8.51
C	-	0.040	-	1.02
D	0.240	0.260	6.10	6.60
E	0.500	-	12.70	-
F (DIA)	0.016	0.021	0.41	0.53
G (DIA)	0.200		5.08	
H	0.100		2.54	
I	0.028	0.034	0.71	0.86
J	0.029	0.045	0.74	1.14

TO-39 (REV: R1)

**LEAD CODE:**

- 1) Emitter
- 2) Base
- 3) Collector

**MARKING: FULL PART NUMBER**

R1 (4-April 2014)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

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- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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### CONTACT US

#### Corporate Headquarters & Customer Support Team

Central Semiconductor Corp.  
145 Adams Avenue  
Hauppauge, NY 11788 USA  
Main Tel: (631) 435-1110  
Main Fax: (631) 435-1824  
Support Team Fax: (631) 435-3388  
[www.centalsemi.com](http://www.centalsemi.com)

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